



DEPARTMENT OF  
**ECOLOGY**  
State of Washington  
**IAA No. C2100076**

**INTERAGENCY AGREEMENT (IAA)**

**BETWEEN**

**THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY**

**AND**

**WASHINGTON STATE UNIVERSITY, STORMWATER CENTER**

**THIS INTERAGENCY AGREEMENT** (“Agreement” or “IAA”) is made and entered into by and between the state of Washington, Department of Ecology, hereinafter referred to as “ECOLOGY,” and the Washington State University Stormwater Center hereinafter referred to as “WSC” and “CONTRACTOR,” pursuant to the authority granted by Chapter 39.34 RCW.

**THE PURPOSE OF THIS AGREEMENT** is for WSC to continue the bioretention study from early terminated contract (C1800154) with USFWS to determine an optimal media depth and longevity of bioretention media for effective stormwater treatment. The overall study evaluates performance effectiveness and longevity of bioretention media across simulated 10 water years in approximately 2 calendar years through water chemistry and biological toxicity tests. The WSC, the subcontractor of the previous contract, will lead and continue the study by conducting the remaining tasks.

**WHEREAS**, both parties to the contract intended to be bound by this contract and had an oral agreement to start service January 1, 2021, but due to administrative delay the written contract was not timely.

**WHEREAS**, ECOLOGY has legal authority (RCW 90.48 and WAC 173-220) and WSC has legal authority (RCW 28B.20.130) that allows each party to undertake the actions in this agreement.

**THEREFORE, IT IS MUTUALLY AGREED THAT:**

**1) SCOPE OF WORK**

WSC shall furnish the necessary personnel, equipment, material and/or service(s) and otherwise do all things necessary for or incidental to the performance of the work set forth in Appendix A, *Statement of Work and Budget*, attached hereto and incorporated herein.

**2) PERIOD OF PERFORMANCE**

The period of performance of this IAA will commence on **January 1, 2021**, and be completed by **March 30, 2022**, unless the Agreement is terminated sooner as provided herein. Amendments extending the period of performance, if any, shall be at the sole discretion of ECOLOGY.

### 3) COMPENSATION

Compensation for the work provided in accordance with this IAA has been established under the terms of RCW 39.34.130 and RCW 39.26.180(3). This is a performance-based agreement, under which payment is based on the successful completion of expected deliverables.

The source of funds for this IAA is **General Fund/ Private-Local account for Stormwater Action Monitoring**. Both parties agree to comply with all applicable rules and regulations associated with these funds.

The parties have determined that the cost of accomplishing the work identified herein will not exceed \$225,100 dollars (\$225,100), including any indirect charges. Payment for satisfactory performance of the work shall not exceed this amount unless the parties mutually agree via an amendment to a higher amount. Compensation for services shall be based on the terms and tasks set forth in Appendix A, *Statement of Work and Budget*. ECOLOGY will not make payment until it has reviewed and accepted the work.

ECOLOGY may, at its sole discretion, terminate or suspend this Contract, or withhold payments claimed by the CONTRACTOR for services rendered, if the CONTRACTOR fails to satisfactorily comply with any term or condition of this Agreement.

### 4) BILLING AND PAYMENT PROCEDURE

Payment requests shall be submitted on state form, Invoice Voucher A19-1A. Invoice voucher shall reference the Agreement (IAA) number and clearly identify those items that relate to performance under this Agreement. Invoices shall describe and document to ECOLOGY's satisfaction a description of the work performed, the progress of the work, and related costs. Attach supporting documentation to the invoice.

Send invoices to:

State of Washington Department of Ecology WQ Program Attn: Keunyea Song P.O. Box 47600 Olympia, WA 98504-7600
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Payment requests may be submitted on a quarterly basis. Upon expiration of this Agreement, any claim for payment not already made shall be submitted to ECOLOGY within 30 days after the expiration date or the end of the fiscal year, whichever is earlier.

Payment will be made within thirty (30) days of submission of a properly completed invoice (form A19-1A) with supportive documentation. All expenses invoiced shall be supported with copies of invoices paid.

Payment will be issued through Washington State's Office of Financial Management's Statewide Payee Desk. To receive payment, CONTRACTOR must register as a statewide vendor by submitting a statewide vendor registration form and an IRS W-9 form at website, <https://ofm.wa.gov/it-systems/statewide-vendorpayee-services>. For questions about the vendor registration process, contact Statewide Payee Help Desk at (360) 407-8180 or email [PayeeRegistration@ofm.wa.gov](mailto:PayeeRegistration@ofm.wa.gov).

### 5) ALTERATIONS AND AMENDMENTS

This Agreement may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

## **6) ASSIGNMENT**

The work to be provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either party in whole or in part, without the express prior written consent of the other party, which consent shall not be unreasonably withheld.

## **7) ASSURANCES**

Parties to this Agreement agree that all activity pursuant to this agreement will be in accordance with all the applicable current federal, state, and local laws, rules, and regulations.

## **8) CONFORMANCE**

If any provision of this Agreement violates any statute or rule of law of the state of Washington, it is considered modified to conform to that statute or rule of law.

## **9) DISPUTES**

Parties to this Agreement shall employ every effort to resolve a dispute themselves without resorting to litigation. In the event that a dispute arises under this Agreement that cannot be resolved among the parties, it shall be determined by a Dispute Board in the following manner. Each party to this Agreement shall appoint one member to the Dispute Board. The members so appointed shall jointly appoint an additional member to the Dispute Board. The Dispute Board shall review the facts, agreement terms, and applicable statutes and rules, and then make a determination of the dispute. The determination of the Dispute Board shall be final and binding on the parties hereto, unless restricted by law. The cost of resolution will be borne by each party paying its own cost. As an alternative to this process, if state agencies, either of the parties may request intervention by the Governor, as provided by RCW 43.17.330, in which event the Governor's process will control. The parties may mutually agree to a different dispute resolution process.

## **10) FUNDING AVAILABILITY**

ECOLOGYS ability to make payments is contingent on availability of funding. In the event funding from state, federal, or other sources is withdrawn, reduced, or limited in any way after the effective date and prior to completion or expiration date of this Agreement, ECOLOGY, at its sole discretion, may elect to terminate the Agreement, in whole or part, for convenience or to renegotiate the Agreement subject to new funding limitations and conditions. ECOLOGY may also elect to suspend performance of the Agreement until ECOLOGY determines the funding insufficiency is resolved. ECOLOGY may exercise any of these options with no notification restrictions, although ECOLOGY will make a reasonable attempt to provide notice.

In the event of termination or suspension, ECOLOGY will reimburse eligible costs incurred by the CONTRACTOR through the effective date of termination or suspension. Reimbursed costs must be agreed to by ECOLOGY and the CONTRACTOR. In no event shall ECOLOGYS reimbursement exceed ECOLOGYS total responsibility under the agreement and any amendments.

## **11) GOVERNING LAW AND VENUE**

This Agreement is entered into pursuant to and under the authority granted by the laws of the state of Washington and any applicable federal laws. The provisions of this Agreement shall be construed to conform to those laws. This Agreement shall be construed and interpreted in accordance with the laws of the state of Washington, and the venue of any action brought hereunder shall be the Superior Court for Thurston County.

## **12) INDEPENDENT CAPACITY**

The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.

## **13) ORDER OF PRECEDENCE**

In the event of an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

- a. Applicable federal and state of Washington statutes, regulations, and rules.
- b. Mutually agreed upon written amendments to this Agreement.
- c. This Agreement, number C2100076.
- d. Appendix A, *Statement of Work and Budget*.
- e. Any other provisions or term of this Agreement, including materials incorporated by reference or otherwise incorporated.

## **14) RECORDS MAINTENANCE**

The parties to this Agreement shall each maintain books, records, documents, and other evidence that sufficiently and properly reflect all direct and indirect costs expended by either party in the performance of the service(s) described herein. These materials shall be subject to inspection, review, or audit by personnel of both parties, other personnel duly authorized by either party, the Office of the State Auditor, and federal officials so authorized by law. All books, records, documents, and other materials relevant to this Agreement must be retained for six years after expiration of this Agreement. The Office of the State Auditor, federal auditors, and any persons duly authorized by the parties shall have full access and the right to examine any of these materials during this period. Each party will utilize reasonable security procedures and protections for all materials related to this Agreement. All materials are subject to state public disclosure laws.

## **15) RESPONSIBILITIES OF THE PARTIES**

Each party of this Agreement hereby assumes responsibility for claims and/or damages to persons and/or property resulting from any act or omissions on the part of itself, its employees, its officers, and its agents. Neither party will be considered the agent of the other party to this Agreement.

## **16) RIGHTS IN DATA**

Unless otherwise provided, data which originates from this Agreement shall be "work made for hire" as defined by the United States Copyright Act, Title 17 U.S.C. section 101 and shall be owned by the State of Washington. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, and register these items, and the ability to transfer these rights.

## **17) SEVERABILITY**

If any provision of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement, and to this end the provisions of this Agreement are declared to be severable.

**18) SUBCONTRACTORS**

CONTRACTOR agrees to take complete responsibility for all actions of any Subcontractor used under this Agreement for the performance. When federal funding is involved there will be additional contractor and subcontractor requirements and reporting.

Prior to performance, all subcontractors who will be performing services under this Agreement must be identified, including their name, the nature of services to be performed, address, telephone, WA State Department of Revenue Registration Tax number (UBI), federal tax identification number (TIN), and anticipated dollar value of each subcontract. Provide such information to ECOLOGY’s Agreement manager.

**19) SUSPENSION FOR CONVENIENCE**

ECOLOGY may suspend this Agreement or any portion thereof for a temporary period by providing written notice to the CONTRACTOR a minimum of seven (7) calendar days before the suspension date. CONTRACTOR shall resume performance on the first business day following the suspension period unless another day is specified in writing by ECOLOGY prior to the expiration of the suspension period.

**20) TERMINATION FOR CAUSE**

If for any cause, either party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either party violates any of these terms and conditions, the aggrieved party will give the other party written notice of such failure or violation. The responsible party will be given the opportunity to correct the violation or failure within fifteen (15) business days. If failure or violation is not corrected, this Agreement may be terminated immediately by written notice of the aggrieved party to the other.

**21) TERMINATION FOR CONVENIENCE**

Either party may terminate this Agreement without cause upon thirty (30) calendar day prior written notification to the other party. If this Agreement is so terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination.

**22) WAIVER**

A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a written amendment to this Agreement signed by an authorized representative of the parties.

**23) AGREEMENT MANAGEMENT**

The representative for each of the parties shall be responsible for and shall be the contact person for all communications, notifications, and billings questions regarding the performance of this Agreement. The parties agree that if there is a change in representatives, they will promptly notify the other party in writing of such change, such changes do not need an amendment.

The ECOLOGY Representative is:	The WSU Representative is:
Name: Keunyea Song Address: 300 Desmond Dr. SE (FedEx) P.O. Box 47600 (USPS) Olympia, WA 98504-7600 Phone: 360-407-6158 Email: Keunyea.Song@ecy.wa.gov	Name: Jenifer McIntyre Address: Puyallup Research & Extension Center, 2606 W Pioneer Ave., Puyallup, WA 98371 Phone: 253-445-4650 Email: jen.mcintyre@wsu.edu

**24) ALL WRITINGS CONTAINED HEREIN**

This Agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties hereto.

The signatories to this Agreement represent that they have the authority to bind their respective organizations to this Agreement.

IN WITNESS WHEREOF, the parties below, having read this Agreement in its entirety, including all attachments, do agree in each and every particular as indicated by their signatures below.

**State of Washington  
Department of Ecology**

**Washington State University  
Stormwater Center**

By:

\_\_\_\_\_  
Signature                      Date

By:

\_\_\_\_\_  
Signature                      Date

\_\_\_\_\_  
Heather R. Bartlett

\_\_\_\_\_  
Print Name:

\_\_\_\_\_  
Deputy Director

\_\_\_\_\_  
Title:

## APPENDIX A STATEMENT OF WORK AND BUDGET

### **Project Title: Longevity of bioretention depths for preventing acute toxicity from urban stormwater runoff**

*This contract is for continuation of the early-terminated SAM contract with US Fish and Wildlife Service (C1800154). The WSC, the subcontractor of the previous contract, will lead and continue the study by conducting the remaining tasks. To remain continuous with the previous contract, these tasks will be numbered starting at Task 4, deliverable 4.3.*

### **Background**

In recent years, several peer-reviewed studies showed that most or all of the described adverse health impacts on aquatic species can be prevented by pre-treating urban runoff with standard bioretention soil mix (60:40 soil:compost) in experimental columns. While these initial results are encouraging, the columns were developed for research purposes and have not been optimized for municipal stormwater management in Puget Sound.

Two important questions that the proposed research will answer are: 1) How long can the 60:40 bioretention soil media prevent toxic effects to aquatic animals, and 2) What soil depths are necessary to provide treatment. Using experimental bioretention columns, this project will explore the potential life expectancy of various depths of bioretention soils. To accomplish this, stormwater runoff will be treated in the columns across an 18-month period representing an accelerated timeline of 10 water years. Chemical and biological effectiveness will be evaluated using analytical chemistry and the health of two fish species; juvenile salmon and a sensitive, high-throughput early life stage fish model (zebrafish embryos). Endpoints will include survival for juvenile salmon and sublethal impacts for zebrafish embryos. An additional metric added to the study is concentrations of 6PPD-quinone in influent and effluent waters. This is the transformation product of 6PPD added to tires to protect against ozone degradation. It was recently determined to be the causal toxicant in acute coho mortality from roadway runoff exposure (Tian et al. 2021). This toxicant was present above acutely lethal concentrations in all roadway runoff samples tested in the Tian et al. study. Measurements will be conducted for influent and effluent waters from the remaining tests with coho salmon (ending WY 6, 8, 10).

Stormwater treatment installations with a shallower infiltration depth, if effective, would be less expensive to install and maintain, would expand the options for use (i.e., places with limited gradient drop), and could reduce the export of pollutants (e.g., nutrients). The findings will inform the design and retrofit of existing stormwater management facilities. This project may inform Phase I municipal permit S5.C.6.a.i.3 Structural Stormwater Controls, Minimum Performance Measures, Retrofit of Existing Treatment and/or Flow Control Facilities. It will also inform BMP T7.30, “Bioretention Cells, Swales, and Planter Boxes,” of Volume V of the 2012 Stormwater Management Manual for Western Washington as amended in 2014, a primary treatment practice.

Outcomes of this study will be 1) providing cost-effective bioretention depth that provide biologically significant improvements in water quality and 2) estimating the longevity of bioretention for preventing toxicity from urban stormwater.

**Task 4 (Continued): Bioretention performance throughout accelerated aging (Total Cost = \$167,040)**

Sampled stormwater runoff has been applied to each column at a rate within the Ksat limits of the Western Washington Hydrology Manual (WWHM Table 1: 0.5 cm/h to 30.5 cm/h), agreed upon with Ecology. Each column is assumed to receive a volume of runoff equivalent to 20:1 contributing:treatment area.

To accelerate column aging, runoff will be applied at an accelerated rate to achieve 10 water years in 18 months of testing. Runoff will be collected approximately 60 times across the 18-month testing period, each time a separate 'event'. At 36" of average annual rainfall, each column will receive approximately 6" of runoff per event under this accelerated schedule. Because the water year and the calendar year will be out of sync, a thermal regime in the greenhouse will match that of the water year being simulated in order to approximate the thermal conditions that the microbial community would normally experience during the calendar year.

For Event 1 and for the event ending each water year (approximately every 6<sup>th</sup> event), influent and effluent will be collected for analytical chemistry and for toxicity testing. Effluent will be collected in glass containers on ice to preserve chemical integrity prior to testing. Effluent from triplicate columns will be combined for toxicology testing. The project includes acute toxicity tests using coho salmon and sublethal toxicity testing for zebrafish embryos. Toxicity testing using coho salmon will be conducted for Event 1 and the Events ending WYs 4, 6, 8, and 10, rather than only Event 1 and the Events ending WYs 5 and 10. Molecular assay using zebrafish (qRT-PCR analysis of metallothionein (*mt2*) and cytochrome P450 (*cyp1a*)) will be conducted for Event 1 and the Events ending each of the 10 WYs. For all other interim events, there will be no toxicology testing and only a small number of parameters will be monitored in the influent and effluent water (e.g., temperature, pH, conductivity).

Progress reports will include status of the contract tasks and decisions related to the tasks made during calls, team meetings, coordination with the advisory committees, and communications with Ecology as appropriate and may include results and findings to date.

**Deliverable 4.3:** Progress Report 3 : This will include analytical chemistry and the results of acute toxicity testing using coho salmon for the Event ending WY 4.

(\$41,761.50) Target Date: May 2021

**Deliverable 4.4:** Progress Report 4: This will include analytical chemistry and the results of acute toxicity testing using coho salmon for the Event ending WY 6.

(\$41,761.50) Target Date: July 2021

**Deliverable 4.5:** Progress Report 5: This will include analytical chemistry and the results of acute toxicity testing using coho salmon for the Event ending WY 8.  
(\$41,758.50) Target Date: September 2021

**Deliverable 4.6:** Progress Report 6: This will include analytical chemistry and the results of acute toxicity testing using coho salmon for the Event ending WY 10.  
(\$41,758.50) Target Date: December, 2021

**Task 5: Outreach & Communication (Total Cost \$58,060)**

**Deliverable 5.1:** Draft fact sheet explaining results for stormwater managers, NPDES permit coordinators, and others involved in stormwater management.  
(\$14,514.50) Target Date: February 2022

**Deliverable 5.2:** Two presentations to share findings with stormwater managers, including a presentation to the Stormwater Workgroup and one regional stormwater conference/workshop.  
(\$14,514.50) Target Date: March 2022

**Deliverable 5.3:** Draft Final report using SAM template. The final report will include sublethal toxicity data for zebrafish from all previous events, as well as 6PPD-quinone concentrations from the end of WY 6, 8, 10.  
(\$14,514.50) Target Date: December 2022

**Deliverable 2.3:** Final report  
(\$14,516.50) Target Date: March 2022

<b>Deliverable</b>	<b>Salaries</b>	<b>Benefits</b>	<b>Materials</b>	<b>Travel</b>	<b>Indirect</b>	<b>Total</b>
D 4.3. Progress Report 3	\$ 11,387	\$ 4,699	\$ 17,202.5	\$ 250	\$ 8,223	\$ 41,761.50
D 4.4. Progress Report 4	\$ 11,387	\$ 4,699	\$ 17,202.5	\$ 250	\$ 8,223	\$ 41,761.50
D 4.5. Progress Report 5	\$ 11,386	\$ 4,698	\$ 17,202.5	\$ 250	\$ 8,222	\$ 41,758.50
D 4.6. Progress Report 6	\$ 11,386	\$ 4,698	\$ 17,202.5	\$ 250	\$ 8,222	\$ 41,758.50
D 5.1. Draft fact sheet	\$ 8,846	\$ 2,532		\$ 141.50	\$ 2,995	\$ 14,514.50
D 5.2. Two presentations	\$ 8,846	\$ 2,532		\$ 141.50	\$ 2,995	\$ 14,514.50
D 5.3. Draft Final report	\$ 8,846	\$ 2,532		\$ 141.50	\$ 2,995	\$ 14,514.50
D 5.4. Final report	\$ 8,847	\$ 2,532		\$ 141.50	\$ 2,996	\$ 14,516.50
<b>Total by Object</b>	\$ 80,931	\$ 28,922	\$ 68,810	\$ 1,566	\$ 44,871	\$ 225,100

### **Budget Justification**

Costs for deliverables include:

PI management (0.5 mo/yr @ 100% FTE including benefits) = \$12,016

Technician (2 mo/yr @ 100% FTE including benefits) = \$20,122

MS Student (1 semester of tuition, including stipend, benefits) = \$20,575

Technician (6 mo/yr @ 100% FTE, including benefits) = \$57,140

Supplies and Materials costs for qPCR, analytical chemistry, HRMS chemistry = \$68,810

Travel to collection sites = \$1,566

Institutional overhead costs (tuition excluded) = 26% (\$44,871)